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A Study on the Posterior Suture Tagging in Zuwai Crab, Chionoecetes opilio (short report)

by Atsushi Yamasaki

There are various methods for the long-term tagging of Zuwai crabs. Watson (1970) attached the tag to the sympodite while Fujita-Takeshita (1979) attached the tag to the posterior suture or to the crust. In all these three methods, one uses a fine tubular tag. The tag is not dropped when the crab exuviates but is designed to move over to the new crust. Furthermore, regarding the place where the tag is implanted, one chooses a soft place in the walking leg coxal joint or in the membrane of the crust rear end. In all these methods, the tag comes without any problem off the old crust at ecdysis time. Yet, in the case of suture tagging and crust tagging, the individuals undergoing normal ecdysis with tag attached were respectively 53.3% and 33.3% as a result of water tank rearing performed by Fujita-Takeshita (1979).

We attempted another method, that is,we attached an anchor tag to the coxa of the fourth ambulatory leg sympodite at the suture. Thus, our method is in principle the same as that of Fujita-Takeshita (1979) which is suture tagging. However, the shape of the tag is the same as that which Wada

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(1984) used for blue crabs. By switching from the traditional tubular shape to a string shape we further decreased the problems caused by ecdysis.

Rearing tagged Zuwai crabs

The Zuwai crabs used in the present tests were gathered on July 26, 1985 by the bolch line fisheries off the Kyoto prefecture. Out of the gathered Zuwai crabs, we chose 3 immature female individuals at the 10th life stage which looked as if going to exuviate in the fall of the same year (crust widths: 70.1 mm, 74.4 mm, 75.4 mm) and one male individual with a crust width of 103.0 mm, judged to be at the 13th life stage. After immediately measuring the crust widths on board, we attached with a tag gun anchor tags (Fig. 1) from which we cut off the plate part (the part marked with a number for the purpose of individual identification) to the coxae of the fourth right (the left is also acceptable) ambulatory legs (Fig. 2). Thereafter, the tagged Zuwai crabs were reared in a 53.4 cm x 34.8 cm x 29.2 cm plastic tank during the period preceding ecdysis. The tank contained about 25 L of seawater. The water was still. Wet set the temperature at about 2 - 3°C and performed gentle aeration. We fed the crabs about once every two or three days. We thawed frozen krill, kurozako shrimp, sokoebijako shrimp* and such, and gave the feed shucked so that there would be no residue (about 5 - 6 g per individual). As a rule, we changed the water once a

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*Translator's note: Crangon sagamiense Balss.

week (practically 100%) and discarded the waste and feed leftover. When not feeding, changing the water or observing, we left the crabs in darkness.

Ecdysis and the tags

From about the 28th to the 49th day of rearing, the three immature female Zuwai crabs at the 10th life stage underwent ecdysis. That is, during August 23 - 26, 1985 the 70.1 mm wide crust changed to a 81.5 mm one. During September 6 - 9, the 74.4 mm crust changed to a 85.4 mm one and during September 13 - 14, the 75.4 mm crust changed to a 88.4 mm one, and the crabs became adults. On November 2 of the same year the male Zuwai crab with a crust width of 103.0 mm exuviated and the width of the new crust was 125.3 mm. In all these crabs, the anchor tag moved to the new crust (Fig. 3).

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Conclusion

The traditional method of tagging Zuwai crabs could be efficient for adult female individuals having completed the last ecdysis of their life. With regard to crabs at the other life stages, obstacles were created for ecdysis and it was extremely likely that the tag would come off. To p. 73 avoid the risk of the tag becoming lost concomitant to ecdysis, the place of attachment and the form of the anchor should be appropriate. This was learned from the present tests. It means that the tagging position is the coxa of the ambulatory leg sympodite and that there is no thickness or fineness difference in the tag.

In the case of the "Shyrion tag" or "Floy anchor tag" used by Watson (1970) and Fujita - Takeshita (1979), there is thickness difference between the tag's part fastened inside the body and the part coming outside the body. It seems that this difference in thickness caused problems at the time the old crust was coming off. By our present tests, measures such as cutting off the plate part attached to commercial anchor tags is effective.

If one uses filiform tags as we did in the present tests, it becomes difficult to mark numbers for individual identification. It is however possible to achieve the purposes of surveys by using tags of different lengths for different degrees of crust width or by painting the tags so that one may recognize the ecological characteristics of the various groups.

By tagging crabs in this fashion and releasing them into natural sea waters, we were able to recapture 10 Zuwai crabs having exuviated.

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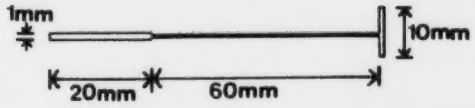

Anchor tag

Fig. 1. The permanent anchor tag used in marking zuwai crab (*C. oplilio*).

Fig. 1: The permanent anchor tag used in marking zuwai crab (C. opilio).

Fig. 2 Anchor tag attached to coxal joint of 4th walking leg.

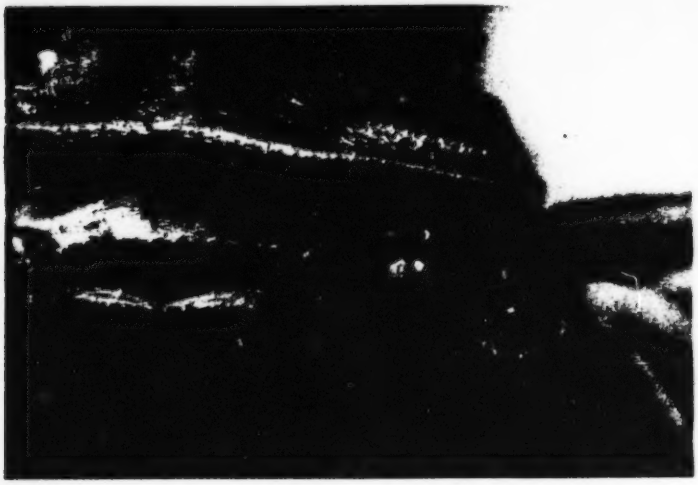

Fig. 3 Showing trace of tag on cast-off shell of zuwai crab (*C. opilio*).

Fig. 3: Showing trace of tag on cast-off shell of zuwai crab (C. opilio).

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